IMR Press

Systematic Review

Effects of violence against women on health during menopause: a systematic review and metanalysis

Loreto Mendoza-Huertas[1], Inmaculada García-Jabalera[1,2], Nicolas Mendoza[1,*]

[1] *Departamento de Obstetricia y Ginecología de la Universidad de Granada, 18004 Granada, Spain*

[2] *Preventive Medicine and Public Hospital General Universitario Ciudad Real, 13001 Castilla-La Mancha, Spain*

*Correspondence: nicomendoza@telefonica.net (Nicolas Mendoza)

DOI:10.31083/j.ceog4806205

Submitted: 6 April 2021 Revised: 14 May 2021 Accepted: 26 May 2021 Published: 15 December 2021

Objective(s): This review aimed to respond to the question of how a history of violence against women (VAW) influences their health during menopause. *Mechanism*: We searched all articles (published in peer-reviewed journals up to March 2021) related to menopausal symptoms, sexual dysfunction, and chronic complications in post-menopausal women affected by VAW. *Findings in brief*: The literature search strategy identified 194 articles, of which 19 were selected for analysis. All articles described cross-sectional or cohort studies concerning menopausal or genitourinary symptoms, psychological health, physical conditions, sexual health, and cardiovascular or metabolic problems. The analyzed data set included 16436 women who reported experiencing violence in the USA, Brazil, and Australia. The combined data on the effect of VAW on menopausal symptoms suggest that the risk of suffering from such effects is 1.51 (95% CI: 1.23–1.86), while for sexual health, the risk was 1.4875 (95% CI: 1.2060–1.8346). *Conclusions*: A history of VAW increases the symptoms of menopause and worsens the physical conditions and sexual and psychological health after the age of 40. Thus, it is essential to investigate these antecedents in routine clinical practice when treating menopausal women with additional symptoms and to warn of the long-term general health risks for any woman who has experienced an episode of violence.

Keywords

Violence against women; Sexual violence; Intimate partner violence; Gender-based violence; Sexual violence; Menopause

1. Introduction

Violence against women (VAW) includes all acts of physical and psychological violence, including intimate or gender-based violence, sexual assaults, abuse, threats, coercion, or arbitrary deprivation of liberty [1]. Although accurate data are not available on the percentage of women who have been victims of VAW, the latter is a common worldwide problem, and it is estimated that at least one in four women who reach menopause has suffered from such violence [2].

In Spain, the scale of the problem of VAW can be illustrated by the fact that, a rape is reported every five hours, and more than a million women have suffered violence in the last decade. Moreover, since records first began, more than a thousand women have been murdered by their partners or ex-partners, and further cause for concern comes from the estimated number of those women who have suffered some degree of severe disability due to violence, which, in the best-case scenario, exceeds 400,000 [3].

Given the deterioration in endocrine function observed in women who have suffered VAW, it is crucial to determine if VAW can generate prolonged endocrine effects years after the violence has occurred. In this regard, the hormonal deficits caused by these situations may be temporary or permanent, but their consequences are, in any case, the same as those of hypoestrogenism suffered by women with persistent central amenorrhea or early menopause [4]. In addition, it has been suggested that a history of VAW can advance the onset of perimenopausal disorders or reduce hormonal levels, suggesting a link between neuroendocrine disorders and hypoestrogenism [5].

It is thus necessary to determine how VAW influences health during perimenopause or post-menopause, including the symptoms experienced during this period (e.g., vasomotor symptoms, psychological effects, and insomnia) and the long-term consequences (cardiometabolic, bone, cognitive, psychological, and psychosexual effects). Women who have suffered violence, particularly of a sexual nature, present more urinary symptoms, as well as a deterioration of their physical condition and psychological health [6].

Other conditions appear to be exacerbated by VAW, including sexually transmitted infections, the risk of which doubles in women who have suffered from violence [7], while VAW is also associated with an increased risk of preinvasive and invasive cervical cancer (2.6-fold increase in the likelihood of a late-stage diagnosis) [8].

This work aimed to provide a systematic review to respond to the following question: "*How does the history of violence against women influence health during menopause?*"

2. Methods

The study was registered at PROSPERO.org[1].

[1] CRD42021225167

2.1 Search strategy

We searched the Scientific Information Web of Knowledge (MEDLINE, Pubmed, Scopus, and Cochrane databases) for all articles (in any language) published in peer-reviewed journals up to March 2021 using the search strategy described in Appendix A. The search criteria were applied to each database and combined with the available database-specific filters. Other publications were identified by manually searching through a reference list of papers highlighted by the search and critical reviews. Press reports published in peer-reviewed journals and reports available online before publication were also considered.

2.2 Eligibility criteria

The PICOS (Population, Intervention exposure, Comparators, Outcomes, and Study Designs) criteria were established *a priori* to guide the scope of the review, along with the procedures, selection, and synthesis of the literature search. The selection criteria were as follows: (Population) perimenopausal or postmenopausal women affected by any type of VAW (Exposure); (Comparators) women not exposed to violence; (Outcome) primary outcomes: quality of life, menopausal symptoms, sexual symptoms, sexual dysfunction, chronic complications (cardiovascular disease, osteoporosis, cognitive impairment; (Study Design) clinical studies.

Any complete article that met the inclusion criteria was reviewed in detail. Other related publications are for reference purposes only.

2.3 Data extraction

We synthesized the evidence according to PRISMA guidelines [9]. In the selected articles, data related to the study design, the sample size, the age of the women, the type of violence suffered, and the vascular, vaginal, sexual, or psychological symptoms experienced were extracted. The authors created the extraction form according to the PICOS framework.

2.4 Risk of bias assessment

The risk of bias was assessed according to the type of study considered. We restricted the inclusion of systematic reviews to those assessing the risk of bias of their included measures and those reporting explicit judgments. Risk of Bias assessment and pooled analyses were conducted using the Begg and Egger tests included within the Epidat 3.1 software statistical package (SERGAS, Xunta de Galicia, Spain).

2.5 Pooled analyses

Pooled analyses were conducted using the Mantel-Haenszel method and the random-effects model using the Epidat 3.1 software statistical package.

Heterogeneity was calculated using the DerSimonian and Laird procedure and was represented graphically using the Galbraith graph. A value of $p = 0.05$ was adopted as the threshold for statistical significance.

A sensitivity analysis with a random-effects model was conducted to determine the reliability and robustness of the overall result obtained. Begg and Egger's tests were conducted to ensure the absence of publication bias when selecting the articles included in the meta-analysis.

3. Results

The literature search strategy identified 194 articles, of which 117 were excluded at various stages of the search, eventually producing a final selection of 19 articles (Fig. 1), five of which were related to menopausal symptoms [10–14], two related to genitourinary symptoms [15, 16], five studies on psychological health or physical conditions [17–21] three on sexual health [22–24], and four on cardiovascular or metabolic problems [25–28]. Nine studies were cross-sectional studies [12–17, 19, 22, 23] and ten were cohort studies [10, 11, 18, 20, 21, 24–28]; two Brazilian [11, 22], two Australian [17, 24] and the rest from USA. For the analysis, all forms of psychological, physical, or sexual mistreatment or abuse were combined into a single category of VAW. The analyzed data set included 16,436 women who reported experiencing violence and 259,150 who did not.

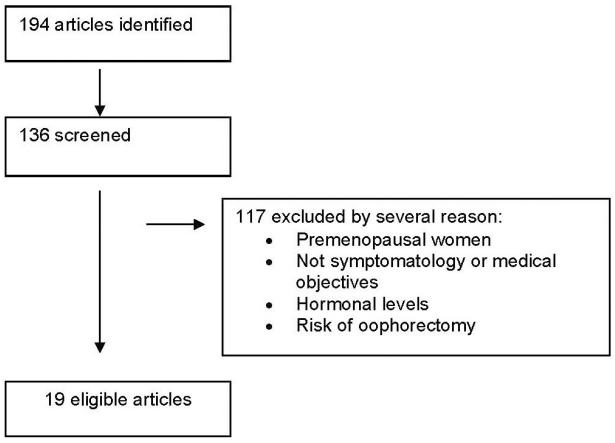


Fig. 1. Flow chart.

Table 1 (Ref. [10–28]) displays a summary of the main characteristics of the selected studies (study design, population, intervention, objective, and main results). The participants' mean age or age range was reported in all articles, but not the time since the violence episode, which was described in only one study [11].

The combined data on the effect of VAW on menopausal symptoms was 1.51 (95% confiance interval (CI): 1.23–1.86; Fig. 2), while for vaginal symptoms or sexual health, the risk was 1.49 (95% CI: 1.21–1.83; Fig. 3). The lack of data did not allow a combined analysis of other signs or symptom.

Moreover, there was no statistical evidence of publication bias (as confirmed by Begg and Egger tests), and the overall findings were not influenced by the removal of any study from the meta-analysis (sensitivity analysis, Fig. 4).

INDIVIDUAL AND COMBINED RESULTS

Study	Year	n	OR	CI (95%)		Weights (%)	
						Fixed eff.	Random eff.
Loxton et al	2006	1897	1.0600	0.9400	1.1953	11.9759	17.3575
Thurston et al	2008	332	1.7500	1.2600	2.4306	1.6019	11.9710
Moraes et al	2012	244	3.4600	2.2000	5.4416	0.8431	9.0523
Vegunta et al	2016	3742	1.1400	0.9600	1.3538	5.8535	16.1815
Gibson et al	2019	200	1.7200	1.3700	2.1594	3.3397	14.7138
Carson et al	2019	295	1.1800	0.8600	1.6191	1.7275	12.2911
Kelley et al	2019	83329	1.4900	1.4200	1.5635	74.6584	18.4328
Fixed effects		91839	1.4230	1.3651	1.4834		
Random effects		91839	1.4686	1.2146	1.7757		

Dersimonian and Laird's heterogeneity test. Q statistic (Chi-square)=53,3146; df= 6; p-value=0,0000; I²= 90%

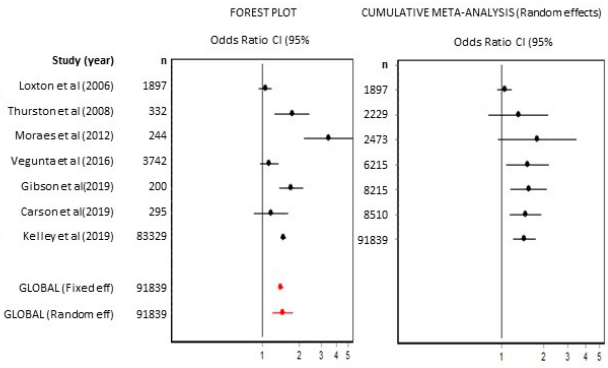


Fig. 2. Menopausal symptoms.

INDIVIDUAL AND COMBINED RESULTS

Study	Year	n	OR	CI (95%)		Weights (%)	
						Fixed eff.	Random eff.
Loxton et al	2006	13897	1,2000	1,0600	1,3585	26,6952	20,8744
Vegunta et al	2016	3842	1,0900	0,9100	1,3056	12,6109	19,3004
Dombek et al	2016	111	1,4500	1,2100	1,7376	12,5476	19,2865
Kelley et al	2019	83329	1,7300	1,5700	1,9363	43,6207	21,4832
Gibson et al	2019	1452	2,5000	1,0000	6,2500	0,4893	4,2505
Gibson et al	2019	2000	2,1600	1,5700	2,9717	4,0362	14,8050
Fixed effects		104631	1,4635	1.3726	1.5604		
Random effects		104631	1.4875	1.2060	1,8346		

Dersimonian and Laird's heterogeneity test. Q statistic (Chi-square)= 38, 53; df= 56; p-value=0,0000; I²= 89%

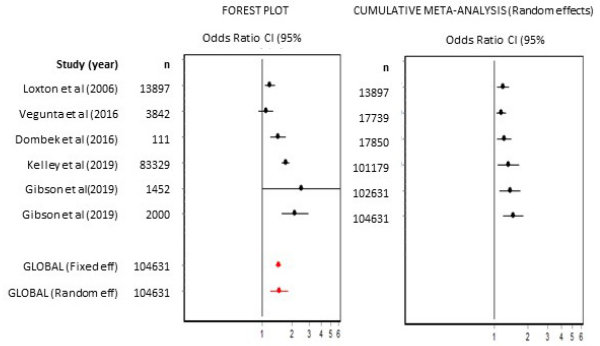


Fig. 3. Sexual health and vaginal symptoms.

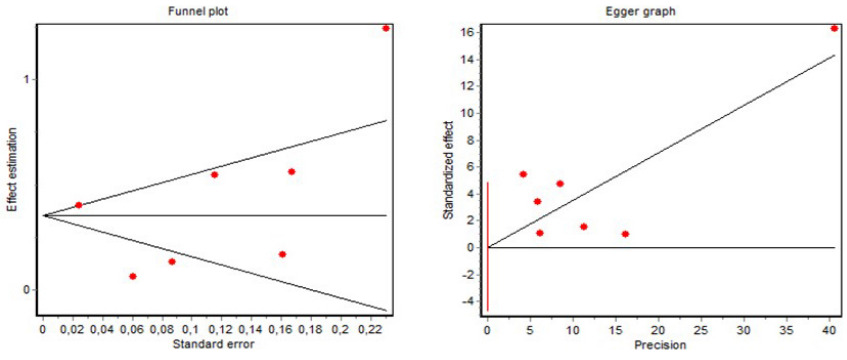
Menopausal symptoms

Begg test

Z statistic	p-value
0.9011	0.3675

Egger test

t statistic	df	p-value
0.0163	5	0.9876



Sexual Health and vaginal symptoms

Begg test

Z statistic	p-value
0.3757	0.7071

Egger test

t statistic	df	p-value
0.1335	4	0.9002

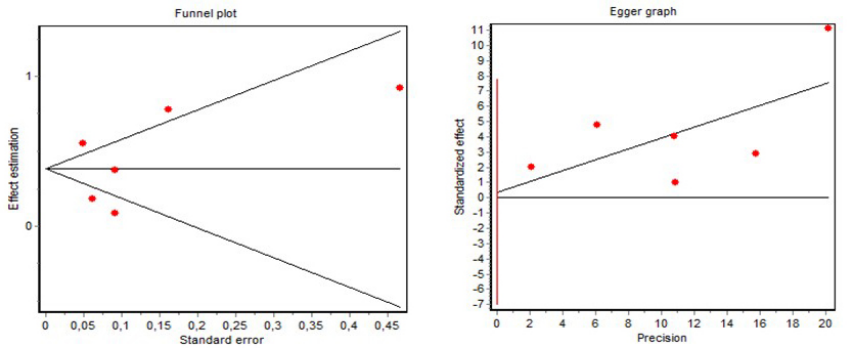


Fig. 4. Publication Bias.

Table 1. Summary of findings.

Authors	Study design	Population	Violence	Objective	Main results
Menopausal symptoms					
Thurston *et al.* 2008 [10]	Cohort study	116 women with violence history Age: 42–52 216 controls	SV	Any/no menopausal symptoms symptoms (hot flashes and night sweats)	SV increased hot flashes and night sweats
Moraes *et al.* 2012 [11]	Cohort study	124 women with violence history Age: 40–65 120 control	IPV/SV	menopausal symptoms (Kupperman Menopausal Index)	IPV/SV increased menopausal symptoms
Vegunta *et al.* 2016 [12]	Cross-sectional study	253 women with violence history Age >40 3489 controls	SV	menopausal symptoms symptoms (Menopause Health Questionnaire)	SV increased menopausal symptoms
Carson *et al.* 2019 [13]	Cross-sectional study	130 women with violence history Age: 40–60 165 controls	SV	Any/no menopausal symptoms symptoms (vaso-motor symptoms: hot flashes, night sweats)	SV increased sleep vasomotor symptoms
Gibson *et al.* 2019 [14]	Cross-sectional study	423 women with violence history Age: 40–80 1593 controls	IPV/SV	menopausal symptoms (difficulty sleeping, hot flashes, night sweet)	IPV/SV increased difficulty sleeping, night sweats and vaginal symptoms
Genitourinary symptoms					
Gybson *et al.* 2019 [15]	Cross-sectional study	428 women with violence history Age: 57–85 1123 controls	SV	Genitourinary symptoms	SV increased vaginal symptoms and urinary incontinence
Boyd *et al.* 2019 [16]	Cross-sectional study	400 women with violence history Age: 40–80 1500 controls	IPV/SV	Genitourinary symptoms	IPV increased weekly incontinence, stress-type inconti nence, urgency-type incontinence and nocturia SV did not increase incontinence or nocturia
Psychological Health/health conditions					
Loxton *et al.* 2006 [17]	Cross-sectional study	2165 women with violence history Age: 40–50 11813 controls	IPV	Primary: Physical conditions Secondary: vasomotor symptoms	IPV caused a worsening of physical conditions
Mouton *et al.* 2010 [18]	Cohort study	10389 women with violence history Age: 50–79 82636 controls	IPV/SV	Psychological health	SV have poorer psychological health
Cannell *et al.* 2015 [19]	Cross-sectional Study	1569 women with violence history Age: 50–79 153.333 controls	IPV/SV	Physical functioning	IPV/SV diminished physical functioning

Table 1. Continued.

Authors	Study design	Population	Violence	Objective	Main results
Mitchell & Woods 2017 [20]	Cohort study	80 women wiyh violence history Age: 41.5 (4.3) 153 controls	SV	Depressed mood	SV increased depressed mood
Makaroum *et al.* 2020 [21]	Cohort study	334 women with violence history Age: >45 2603 controls	IPV/SV	Health Conditions	IPV/SV increase morbidity and health service utilization
Sexual Health					
Dombek *et al.* 2016 [22]	Cross-sectional study	50 women with violence history Age: 45–65 95 and 77 controls	SV/IPV	Sexual Health	SV increased sexual disfunctions
Kelley *et al.* 2019 [23]	Cross-sectional study	9410 women whit violence history Age: 50–79 73919 controls	SV	Sexual Health	SV increased sexual dissatisfactions
Howard *et al.* 2006 [24]	Cohort study	108 women with violence history Age: 40–80 366 controls	SV	Sexual Health	SV decreased satisfaction
Cardiovascular or metabolic issues					
Matthews *et al.* 2014 [25]	Cohort study	116 women with violence history Age: 42–52 216 controls	SV.	Primary: obesity. Secondary: CRP levels	SV was related to CRP change but not BMI changes.
Midei *et al.* 2014 [26]	Cohort study	116 women with violence history Age: 42–52 216 controls	SV	Metabolic syndrome	No relation
Fernandez *et al.* 2011 [27]	Cohort study	46 women with violence history Age: 45–60 21 controls	IPV	Pro-inflammatory markers	No relation
Thurston *et al.* 2014 [28]	Cohort study	643 women with violence history Age median: 59.55 (SD 227) 759 controls	IPV/SV	CVD risk (carotid IMT)	Only childhood SV increased carotid IMT

Abbreviations, BMI, Body mass index; CRP, C reactive protein; CVD, cardiovascular disease; IPV, intimate partner violence; SV, sexual violence; IMT, carotid intima media thickness; SD, standard desviation.

4. Discussion

This article presents the first systematic review and meta-analysis to evaluate the effects of VAW (experienced at any time before menopause) on women's health during menopause. Overall, our findings indicate that VAW has a significant impact on menopausal symptoms and sexual health. In addition, women who have suffered violence, particularly sexual nature, presented more urinary symptoms and a worsening of their physical condition and psychological health.

As previously noted, for analytical purposes, we have considered all possible forms of VAW. These include verbal, emotional, physical, or sexual abuse, which can occur within or outside of a partner relationship since we consider that the link between neuroendocrine function and the appearance of menopausal symptoms and health problems in this period is the same for all types of abuse.

Despite the growing awareness of the importance of VAW (in any of its forms) for women's general health, relatively few studies have adequately investigated the long-term effects of this type of violence, particularly on health problems during middle age and later life, that is, the postmenopausal period.

Further cause for concern comes from the estimated number of those women who have suffered some degree of severe disability due to VAW. This figure rises considerably if we consider other less severe or "silent" disabilities, many of which have a clinical presentation similar to the symptoms of menopause [3].

However, although the literature is scarce, some studies have observed the consequences of VAW on long-term gynecological health, which are broadly similar to the symptoms that occur after hypoestrogenism [5]. The neuroendocrine connection between VAW and hypoestrogenism is the same as that observed in high-stress situations that cause central amenorrhea, in addition to the psychological or sexual consequences, which are similar to those caused by posttraumatic stress disorders [29–31].

In another sense, questions about VAW are generally not raised by women [32], or not asked by doctors [33]. Although these are two different issues, both highlight the need for health care providers to add VAW issues to the list of actions for promoting gender-transformative approaches in the sustainable development goals to improve health [34].

Moreover, the necessary and strict confinements imposed by authorities in response to the COVID-19 pandemic have impacted the general health of women, whose care has not met the standards that had previously been set by scientific societies [35, 36].

Our review is the first to systematically address the research conducted on the influence of VAW in any of its forms on women's health during menopause, although other narrative reviews have provided updates on this topic [37, 38].

This systematic review has gathered the available evidence on the effects of VAW on women's health during menopause. This review was not limited to sexual or gender-based violence but instead was expanded to include the registry of publications on other forms of abuse to provide a broader perspective of the influence of abuse on the health of menopausal women.

Our search identified 19 studies that included data on the impact of VAW on menopausal symptoms or other health problems commonly experienced during this period, such as genitourinary, psychological, sexual, and physical conditions. According to the data reported by Vegunta *et al.* [12], associations have been observed between VAW and adiposity, metabolic syndrome, and subclinical cardiovascular disease in middle age. Some of the studies included in this review [12] found that women who admitted having suffered abuse presented more menopausal symptoms when adjusting the data for possible confounding and demographic factors, reinforcing the idea that VAW affects women regardless of age, ethnic origin, or socioeconomic status.

Of particular interest are the data that indicate an increase in nocturnal vasomotor symptoms shown by women who have suffered violence [10, 13, 14]. Sleep disturbances may be due to problems other than the night sweats experienced by many women during menopause, which can be explained by heart rate variability or disturbances of the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis. Relatively little is still known about the neurobiology of hot flashes and their nocturnal manifestations, but what is fascinating is the possibility that childhood trauma or VAW could determine a women's physiology from infancy to the postmenopausal stage of life.

Thus, it appears that violence suffered in the early stages of a woman's life (as early as infancy) could impact reproductive health in the medium term, such as the pregnancy/perinatal period [39]. VAW has been associated with increased long-term health risks, including chronic pelvic pain, migraines, low back pain, irritable bowel syndrome, anxiety, depression, drug and alcohol use, somatization, and poor sexual function. Certain health-related behaviors have also been linked to VAW in childhood, such as eating disorders, obesity, or smoking [40].

In addition — and although not included in this review — other studies have shown that a history of VAW can advance the onset of perimenopausal disorders, lower the age of menopause onset, or reduce hormonal levels. These observations support the notion of a link between neuroendocrine disorders and hypoestrogenism. Another key study found that a history of VAW was associated with an increased risk of undergoing a bilateral oophorectomy and, consequently, presenting symptoms associated with hypoestrogenism [41, 42]. The experience of VAW is common among American women, and its association with late diagnosis of advanced stage female cancers (breast, ovary, endometrium) has been reported [8].

5. Limitations

The main limitation of this review stems from the low quality of the selected studies. These are cross-sectional studies, some of which are classified as cohorts by their authors, with considerable clinical heterogeneity in their designs. Furthermore, the most recognized limitations in the studies include the small sample size, the use of retrospective self-reports of the symptoms suffered, and the lack of data on the intensity of the menopausal symptoms, particularly vasomotor symptoms.

However, despite obtaining a high score on the test of heterogeneity, we could consider this result to be informative since it indicates the high degree of dispersion in the effects reported in the studies reviewed here.

6. Conclusions and future research

This review contributes to the literature on VAW and suggests that we should consider implementing an ongoing screening program for VAW, even after reproductive age and before the onset of menopausal symptoms or deterioration of sexual function. This review provides further evidence that women who have suffered VAW and have reached menopause are at greater risk of experiencing deterioration in their health. Moreover, aside from the direct physical or psychological consequences of VAW, most of these women are also at greater risk of suffering from other less severe disabilities (injury, chronic pain, depression, and posttraumatic stress disorder), which are, nonetheless, sufficiently disturbing to warrant consideration as part of their clinical care.

In conclusion, a history of VAW increases the symptoms of menopause and worsens the physical conditions and the sexual and psychological health of these women when they reach middle age. Therefore, it is essential to consider these antecedents as part of our routine clinical practice when treating menopausal women with excessive symptoms and warn of the general long-term health risks faced by all women who have suffered an episode of VAW in their lifetime.

Author contributions

LMH, IGJ, NM: conception and design of the idea. LMH, NM Selection of studies, Data extraction and preparation of manuscript. IGJ: Data extraction and pooled analyses. All authors participated in data interpretation, statement and approved the final version of the manuscript.

Ethics approval and consent to participate

Not applicable.

Acknowledgment

Your English Lab has edited the English language of the text. The work presented in this article is part of the doctoral thesis of L Mendoza-Huertas.

Funding

This research received no external funding.

Conflict of interest

The authors declare no conflict of interest.

References

[1] Meyer SR, Lasater ME, Lee L, Garcia-Moreno C. Measurement of violence against women and disability: protocol for a scoping review. BMJ Open. 2020; 10: e040104.

[2] Cannell MB, Weitlauf JC, Garcia L, Andresen EM, Margolis KL, Manini TM. Cross-sectional and longitudinal risk of physical impairment in a cohort of postmenopausal women who experience physical and verbal abuse. BMC Women's Health. 2015; 15: 98.

[3] World Health Organization. WHO multi-country study on women's health and domestic violence against women. ISBN: 92 4 159351 2. 2005. Available at: https://www.who.int/reproductivehealth/topics/violence/mc_study/en/#:~:text=The%20WHO%20Multi-country%20Study%20on%20Women%27s%20Health%20and,carried%20out%20in%2015%20sites%20in%2010%20countries%3A (Accessed: 6 April 2005).

[4] Mendoza N, Juliá MD, Galliano D, Coronado P, Díaz B, Fontes J, *et al.* Spanish consensus on premature menopause. Maturitas. 2015; 80: 220–225.

[5] Thurston RC, Bromberger J, Chang Y, Goldbacher E, Brown C, Cyranowski JM, *et al.* Childhood abuse or neglect is associated with increased vasomotor symptom reporting among midlife women. Menopause. 2008; 15: 16–22.

[6] Campbell JC. Health consequences of intimate partner violence. Lancet. 2002; 359: 1331–1336.

[7] Bauer HM, Gibson P, Hernandez M, Kent C, Klausner J, Bolan G. Intimate partner violence and high-risk sexual behaviors among female patients with sexually transmitted diseases. Sexually Transmitted Diseases. 2002; 29: 411–416.

[8] Modesitt SC, Gambrell AC, Cottrill HM, Hays LR, Walker R, Shelton BJ, *et al.* Adverse impact of a history of violence for women with breast, cervical, endometrial, or ovarian cancer. Obstetrics and Gynecology. 2006; 107: 1330–1336.

[9] Moher D, Liberati A, Tetzlaff J, Altman DG; PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. PLoS Medicne. 2009; 6: e1000097.

[10] Thurston RC, Bromberger J, Chang Y, Goldbacher E, Brown C, Cyranowski JM, *et al.* Childhood abuse or neglect is associated with increased vasomotor symptom reporting among midlife women. Menopause. 2008; 15: 16–22.

[11] Moraes SDTDA, da Fonseca AM, Soares JM, Bagnoli VR, Souza MA, Ariê WMY, *et al.* Construction and validation of an instrument that breaks the silence: the impact of domestic and/or sexual violence on women's health, as shown during climacterium. Menopause. 2012; 19: 16–22.

[12] Vegunta S, Kuhle C, Kling JM, Files JA, Kapoor E, David PS, *et al.* The association between recent abuse and menopausal symptom bother: results from the Data Registry on Experiences of Aging, Menopause, and Sexuality (DREAMS). Menopause. 2016; 23: 494–498.

[13] Carson MY, Thurston RC. Childhood abuse and vasomotor symptoms among midlife women. Menopause. 2019; 26: 1093–1099.

[14] Gibson CJ, Huang AJ, McCaw B, Subak LL, Thom DH, Van Den Eeden SK. Associations of Intimate Partner Violence, Sexual Assault, and Posttraumatic Stress Disorder with Menopause Symptoms among Midlife and Older Women. JAMA Internal Medicine. 2019; 179: 80–87.

[15] Gibson CJ, Lisha NE, Walter LC, Huang AJ. Interpersonal trauma and aging-related genitourinary dysfunction in a national sample of older women. American Journal of Obstetrics and Gynecology. 2019; 220: 94.e1–94.e7.

[16] Boyd BAJ, Gibson CJ, Van Den Eeden SK, McCaw B, Subak LL, Thom D, *et al.* Interpersonal Trauma as a Marker of Risk for Urinary Tract Dysfunction in Midlife and Older Women. Obstetrics & Gynecology. 2020; 135: 106–112.

[17] Loxton D, Schofield M, Hussain R, Mishra G. History of domestic violence and physical health in midlife. Violence against Women. 2006; 12: 715–731.
[18] Mouton CP, Rodabough RJ, Rovi SLD, Brzyski RG, Katerndahl DA. Psychosocial effects of physical and verbal abuse in postmenopausal women. Annals of Family Medicine. 2010; 8: 206–213.
[19] Cannell MB, Weitlauf JC, Garcia L, Andresen EM, Margolis KL, Manini TM. Cross-sectional and longitudinal risk of physical impairment in a cohort of postmenopausal women who experience physical and verbal abuse. BMC Women's Health. 2015; 15: 98.
[20] Mitchell ES, Woods NF. Depressed mood during the menopausal transition: is it reproductive aging or is it life? Women's Midlife Health. 2017; 3: 11.
[21] Makaroun LK, Brignone E, Rosland A, Dichter ME. Association of Health Conditions and Health Service Utilization with Intimate Partner Violence Identified via Routine Screening among Middle-Aged and Older Women. JAMA Network Open. 2020; 3: e203138.
[22] Dombek K, Capistrano EJM, Costa ACC, Marinheiro LPF. Risk factors associated with sexual dysfunction in Brazilian postmenopausal women. International Journal of Impotence Research. 2016; 28: 62–67.
[23] Kelley EL, Cannell MB, Gass M, Sealy-Jefferson S, Woods NF, Bird CE, *et al.* Is Interpersonal Abuse Associated with Sexual (Dis)satisfaction among Postmenopausal Women? Women's Health Issues. 2019; 29: 299–307.
[24] Howard JR, O'Neill S, Travers C. Factors affecting sexuality in older Australian women: sexual interest, sexual arousal, relationships and sexual distress in older Australian women. Climacteric. 2006; 9: 355–367.
[25] Matthews KA, Chang Y, Thurston RC, Bromberger JT. Child abuse is related to inflammation in mid-life women: role of obesity. Brain, Behavior, and Immunity. 2014; 36: 29–34.
[26] Midei AJ, Matthews KA, Chang Y, Bromberger JT. Childhood physical abuse is associated with incident metabolic syndrome in mid-life women. Health Psychology. 2013; 32: 121–127.
[27] Fernandez-Botran R, Miller JJ, Burns VE, Newton TL. Correlations among inflammatory markers in plasma, saliva and oral mucosal transudate in post-menopausal women with past intimate partner violence. Brain, Behavior, and Immunity. 2011; 25: 314–321.
[28] Thurston RC, Chang Y, Derby CA, Bromberger JT, Harlow SD, Janssen I, *et al.* Abuse and subclinical cardiovascular disease among midlife women: the study of women's health across the nation. Stroke. 2014; 45: 2246–2251.
[29] Assari S, Caldwell CH, Abelson JL, Zimmerman M. Violence Victimization Predicts Body Mass Index one Decade Later among an Urban Sample of African American Young Adults: Sex as a Moderator and Dehydroepiandrosterone as a Mediator. Journal of Urban Health. 2019; 96: 632–643.
[30] Kellner M, Muhtz C, Weinås Å, Ćurić S, Yassouridis A, Wiedemann K. Impact of physical or sexual childhood abuse on plasma DHEA, DHEA-S and cortisol in a low-dose dexamethasone suppression test and on cardiovascular risk parameters in adult patients with major depression or anxiety disorders. Psychiatry Research. 2018; 270: 744–748.
[31] Bremner D, Vermetten E, Kelley ME. Cortisol, dehydroepiandrosterone, and estradiol measured over 24 hours in women with childhood sexual abuse-related posttraumatic stress disorder. Journal of Nervous and Mental Disease. 2007; 195: 919–927.
[32] Moraes SDTDA, da Fonseca AM, Soares JM, Bagnoli VR, Souza MA, Ariê WMY, *et al.* Construction and validation of an instrument that breaks the silence: the impact of domestic and/or sexual violence on women's health, as shown during climacterium. Menopause. 2012; 19: 16–22.
[33] Rodriguez M, Bauer H, McLoughlin E, *et al.* Primary care physicians miss opportunities to screen patients for intimate partner abuse. Journal of the American Medical Association. 1999; 282: 468–474.
[34] Manandhar M, Hawkes S, Buse K, Nosrati E, Magar V. Gender, health and the 2030 agenda for sustainable development. Bulletin of the World Health Organization. 2018; 96: 644–653.
[35] Position Paper on Sexual and Reproductive Health and Rights 2019. Ternat: European Society of Contraception and Reproductive Health, 2019. Licence: CC BY-NC-SA 3.0 IGO. 2019. Available at: https://escrh.eu/wp-content/uploads/2019/08/ESC-Position-Paper.pdf (Accessed: 21 May 2010).
[36] World Health Organization. Violence against women Prevalence Estimates, 2018. Global, regional and national prevalence estimates for intimate partner violence against women and global and regional prevalence estimates for non-partner sexual violence against women. WHO: Geneva, 2021. CC BY-NC-SA 3.0 IGO. Available at: https://www.who.int/news-room/fact-sheets/detail/violence-against-women (Accessed: 9 March 2021).
[37] Ali P, McGarry J. Intimate partner violence, post-traumatic disorders and menopausal symptoms. Evidence-Based Nursing. 2019; 22: 90.
[38] Tracy EE. Intimate partner violence and the climacteric. Menopause. 2016; 23: 479–480.
[39] Brunton R, Dryer R. Child Sexual Abuse and Pregnancy: a Systematic Review of the Literature. Child Abuse & Neglect. 2021; 111: 104802.
[40] Pinkerton JV, Dougherty P, Modesitt SC. The effects of abuse on health problems in menopausal women. Menopause. 2008; 15: 1–4.
[41] Gazzuola Rocca L, Smith CY, Grossardt BR, Faubion SS, Shuster LT, Stewart EA, *et al.* Adverse childhood or adult experiences and risk of bilateral oophorectomy: a population-based case–control study. BMJ Open. 2017; 7: e016045.
[42] Ryan GL, Mengeling MA, Summers KM, Booth BM, Torner JC, Syrop CH, *et al.* Hysterectomy risk in premenopausal-aged military veterans: associations with sexual assault and gynecologic symptoms. American Journal of Obstetrics and Gynecology. 2016; 214: 352.e1–352.e13.